

REMARKS

A. Request for Reconsideration

Applicants have carefully considered the matters raised by the Examiner in the outstanding Office Action but remain of the position that patentable subject matter is present. Applicants respectfully request reconsideration of the Examiner's position based on the amendments to the specification, the amendments to the claims, and the following remarks.

B. The Invention

The present invention is directed to an electrophotographic photoreceptor, a processing cartridge, an image forming apparatus, and an image forming method which reduce image defects during high speed image formation under low temperature and low humidity or under high temperature and high humidity.

In one of the novel aspects of the invention, the photoreceptor has a photosensitive layer which contains a mixture of two or more compounds represented by Formula (1) having a number "n" different from each other, wherein (Rp + Rs) is not more than 99%. In other words, a non-homogeneous polymer is used for the charge transfer material, wherein the polymer is non-homogeneous because of different molecular weights.

C. Claim Status and Amendments

Claims 1-17 are presented for further prosecution.

Claim 2 has been amended to recite that the charge generation layer contains a charge generation material. Support for this amendment can be found in lines 1-4 on page 87 of the application.

D. Specification Amendments

Page 7 of the application has been amended to correct an obvious typographical error. Support for this amendment can be found in lines 1-4 on page 87.

E. Specification Objections

The Examiner objected to page 116 of the specification because the word "compounds" was misspelled. Applicants have corrected this misspelling on page 116, as well as on pages 123 and 132.

F. Claim Rejections

Claims 1-17 had been rejected as being unpatentable over either Yoshino (U.S. 2003/0190456) or Takano (U.S. 5,427,879).

Yoshino and Takano had each been cited to teach a photosensitive layer having two or more similar charge transfer materials. The Examiner stated that it would have been obvious

to use any desired similar charge transfer materials based on the teachings of Yoshino and Takano.

1. Yoshino and Takano do not teach or suggest a mixture of compounds represented by Formula (1) having chain structures that differ by the number "n"

Claim 1 recites that the photosensitive layer contains a mixture of two or more compounds represented by Formula (1) having a specific number "n" different from each other. As explained in the final paragraph on page 16 of the application, the number "n" in Formula (1) signifies the length of the chain structure of the CTM-group. In other words, as "n" increases, the CTM chain structure also increases and the molecular weight of the polymer increases.

Yoshino and Takano do not teach or suggest employing two or more compounds represented by Formula (1) wherein the compounds differ by the length of the CTM-chain structure. In other words, Yoshino and Takano do not teach or suggest employing a mixture of two or more compounds represented by Formula (1) that have "n" values different from each other. Instead, Yoshino and Takano teach using multiple charge transfer materials, without specifying that the compounds should have a different "n" value signifying a different length of the CTM-chain structure.

Applicants respectfully submit that the present invention is not obvious over the teachings of Yoshino and Takano.

2. Yoshino and Takano do not teach or suggest $R_p + R_s$ not more than 99% or the criticality of this range

Claim 1 recites that $(R_p + R_s)$ is not more than 99%, wherein R_p is the content of a compound of Formula (1) having the largest presence ratio and R_s is the content of a compound of Formula (1) having the second largest presence ratio.

The inventors have discovered that when $R_p + R_s$ is not more than 99%, the charge transferring ability is considerably improved, sensitivity problems caused by processing at high speed or under conditions of low temperature and low humidity are resolved, the permeability of the solvent or the binder resin is remarkably improved, the occurrence of black spotting and the recurring image defects are prevented, and cracking is inhibited (page 16, par. 2 of the application).

The criticality of the $R_p + R_s$ range of claim 1 is demonstrated in Table 3 on page 121 of the application. As shown in Table 3, Comparative Photoreceptor 15B contains 100% of a single charge transfer material where "n" is 0, Comparative Photoreceptor 16B contains 100% of a single charge transfer material where "n" is 3, and Comparative Photoreceptor 17B contains 50% of a first charge transfer material where "n" is 2

and 50% of a second charge transfer material where "n" is 3. Thus, Comparative Photoreceptors 15B, 16B, and 17B do not fall within the scope of claim 1, because the $R_p + R_s$ value is more than 99%.

In contrast to Comparative Photoreceptors 15B, 16B, and 17B, Inventive Photoreceptor 12B, for example, contains two or more charge transfer materials, wherein the $R_p + R_s$ value is not more than 99%. Specifically, Inventive Photoreceptor 12B has an $R_p + R_s$ value of 91.8 (calculated by adding 72.0 where n is 0 and 19.8 where n is 1).

As shown in Table 4 on page 123 of the application, Inventive Photoreceptor 12B was superior to Comparative Photoreceptors 15B, 16B, and 17B in terms of electrical potential variation, black spotting, recurring image defects, cracking, image density, and sharpness. Specifically, Inventive Photoreceptor 12B exhibited and electrical potential variation of less than 50V, no black spotting, 6-10 defects per sheet of A4 paper, no cracking, an image density of 1.2-0.8, and part of the 3 point character images were unreadable while all of the 5 point character images were readable. In contrast to Inventive Photoreceptor 12B, Comparative Photoreceptors 15B and 17B exhibited electrical potential variation more than 150V, either black spotting on the nuclei or black spotting on the half tone image, at least 11 defects per A4 sheet of paper, either slight

cracking or cracking and line-shaped image defects, an image density of less than 0.8, and almost all images of 3 point character were unreadable while all parts of the 5 point character images were unreadable. Comparative Photoreceptor 16B was also inferior to Inventive Photoreceptor 12B and was not evaluated because the sensitivity was very low (page 124, lines 9-14).

Applicants submit that Tables 3 and 4 of the application demonstrate the criticality of employing a photosensitive layer having a mixture of two or more compounds represented by Formula (1) having a number "n" different from each other, wherein $R_p + R_s$ is not more than 99%. Yoshino and Takano do not teach or suggest employing a mixture of two or more compounds represented by Formula (1) having different "n" values or the criticality of the $R_p + R_s$ ratio as shown in Tables 3 and 4 of the application. It is therefore respectfully submitted that the present invention is not obvious based on the teachings of Yoshino or Takano taken alone or in combination.

G. Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested. Should any extensions of time or fees be necessary in order to maintain this Application in pending

condition, appropriate requests are hereby made and
authorization is given to debit Account # 02-2275.

Respectfully submitted,

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